

PORTLAND FIRE WEATHER – 2004 ANNUAL REPORT

2004 PRE-SEASON: PRECIPITATION

Table One (below) shows precipitation amounts for various locations from fall through spring. Nearly all sites showed normal totals. The Willamette Valley locations (Portland and Eugene) received 80-85 percent of normal. Oakridge had a rather wet winter, which resulted in 117 percent of normal pre-fire season precipitation.

The monthly precipitation distribution was quite variable. Most locations experienced below-normal amounts in November, but December and January were near normal to slightly above normal. This trend was similar to the previous year. Conditions from February through April were quite dry. The coast and valley locations observed 1/3 to 2/3 of normal precipitation in the March and April period. The 1.53 inches at Portland (March) was the fourth driest on record. The two-month total of 2.54 inches was the least since 1926 (1.60 inches). It is interesting to note that the Cascade sites (Government Camp and Oakridge) had above-normal May precipitation, while the coastal and valley sites were generally below normal.

Early prognostications for fire season 2004 painted a grim picture, based on the rather sparse rainfall during March and April. Several experts expected 2004 to be similar, or worse, than the busy fire years of 2000, 2002, and 2003.

TABLE ONE
2003-2004 WET SEASON PRECIPITATION SUMMARY

	NOV	DEC	JAN	FEB	MAR	APR	MAY	TOT	AVE	PCT AVE
Astoria	9.75	9.87	12.90	6.97	5.47	2.85	3.37	51.18	53.71	95.3%
Newport	8.97	15.48	13.46	6.40	3.96	3.76	2.67	54.70	57.47	95.2%
Laurel Mtn.	16.70	20.17	29.08	13.71	8.67	6.42	5.47	100.22	100.92	99.3%
Portland	4.09	7.45	4.86	3.95	1.53	1.01	1.78	24.67	28.98	85.1%
Eugene	5.73	10.63	7.07	4.11	1.80	2.69	1.73	33.76	42.35	79.7%
G. Camp	11.66	13.43	17.33	6.97	6.26	3.04	8.77	67.46	71.40	94.5%
Oakridge	7.32	9.40	9.71	6.32	2.76	2.97	5.30	43.78	37.34	117.2%

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Figures 1 and 2 depict the March and April precipitation anomalies for the Western United States. The charts on pages 5 through 9 show the 2003-2004 pre-fire season precipitation compared to normal.

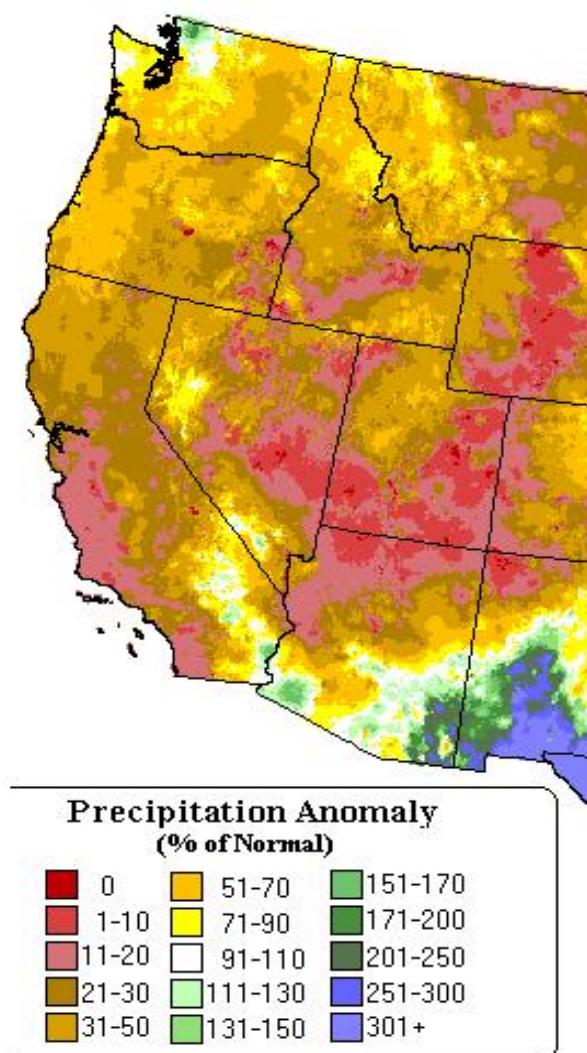


FIGURE 1: MARCH 2004 PRECIPITATION ANOMALY (COURTESY OF OREGON CLIMATE SERVICE)

The highest measured Energy Release Component (ERC) during the season was 70 at Emigrant RAWS (zone 608), which occurred August 11th and 12th. Fields RAWS (zone 608) recorded an ERC of 65 on August 21st. In late August, the 100-hour fuel moisture values climbed to 39 in the North Oregon Cascades and Gifford Pinchot NF.

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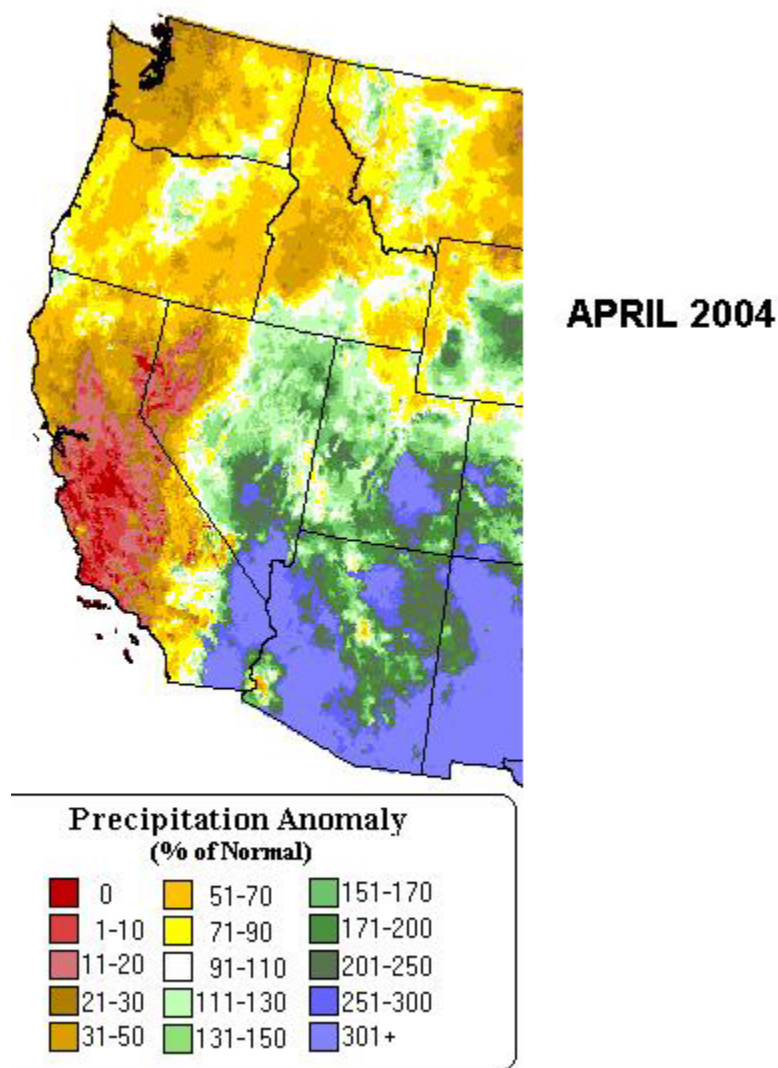


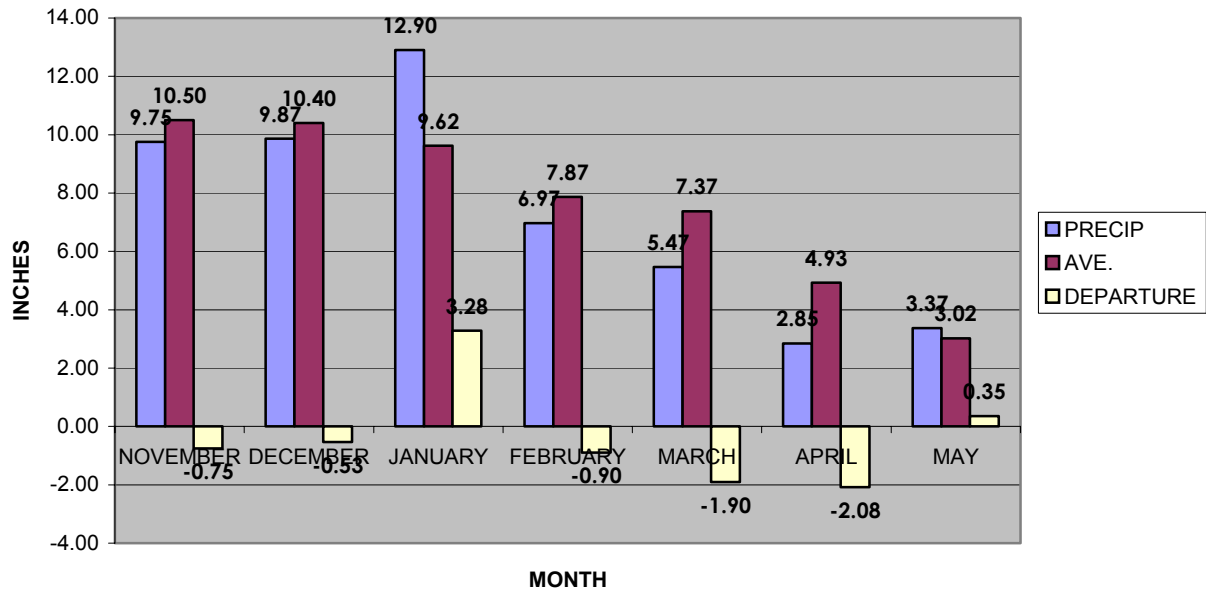
FIGURE 2: APRIL 2004 PRECIPITATION ANOMALY (COURTESY OF OREGON CLIMATE SERVICE)

There were just three 10,000+ acre fires in Region Six during the 2004 season: 1) Pot Peak Complex (Okanogan-Wenatchee NF) 47,170 acres, 2) Fischer Fire (Okanogan-Wenatchee NF) 16,439 acres, and 3) Log Springs Fire (Warm Springs BIA) 13,539 acres.

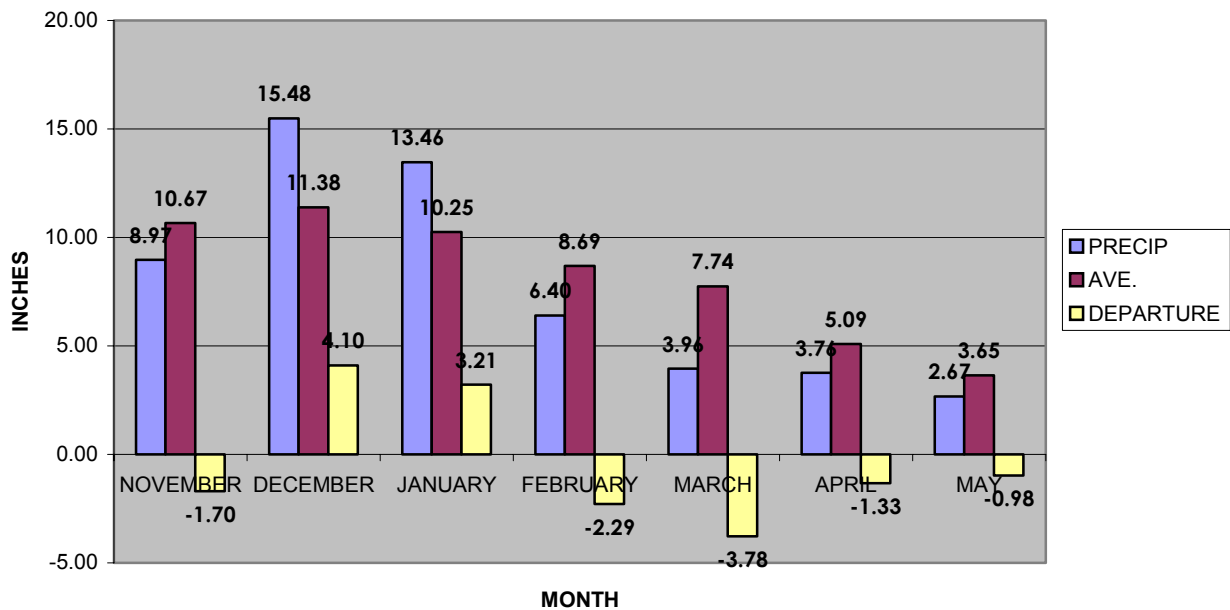
The North Cascades Area (zones 605, 607, and 660) reached “critical” ERC values (45 or higher) on July 18th. Blue Ridge RAWs (zone 607) was the only station to have an ERC of 60. This occurred on July 28th and also August 1st.

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2003-2004 WET SEASON
ASTORIA

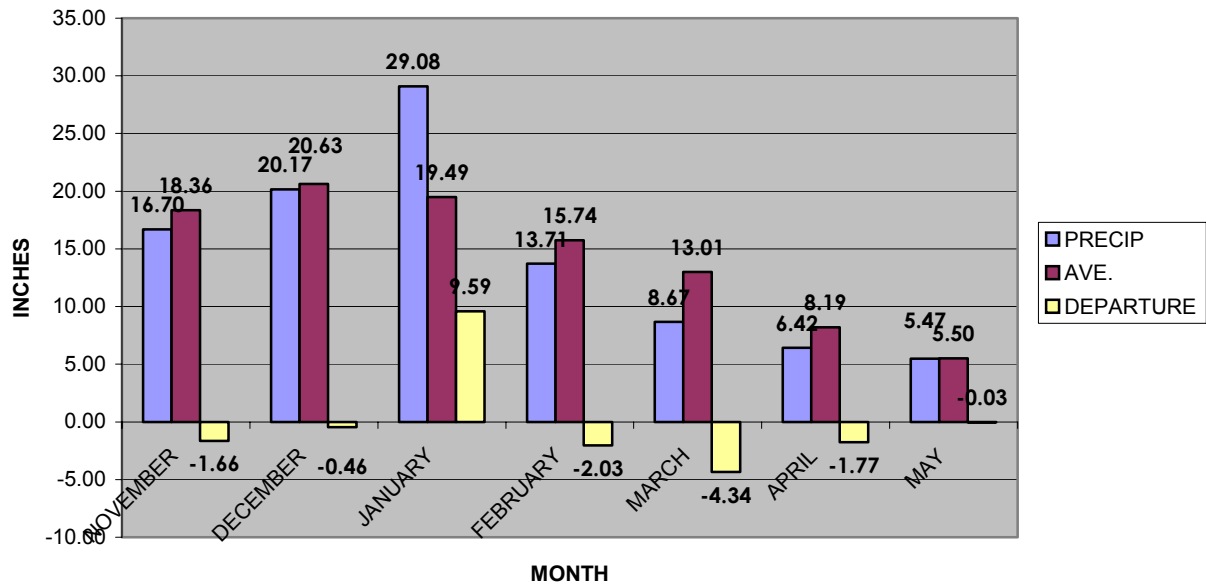


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NEWPORT

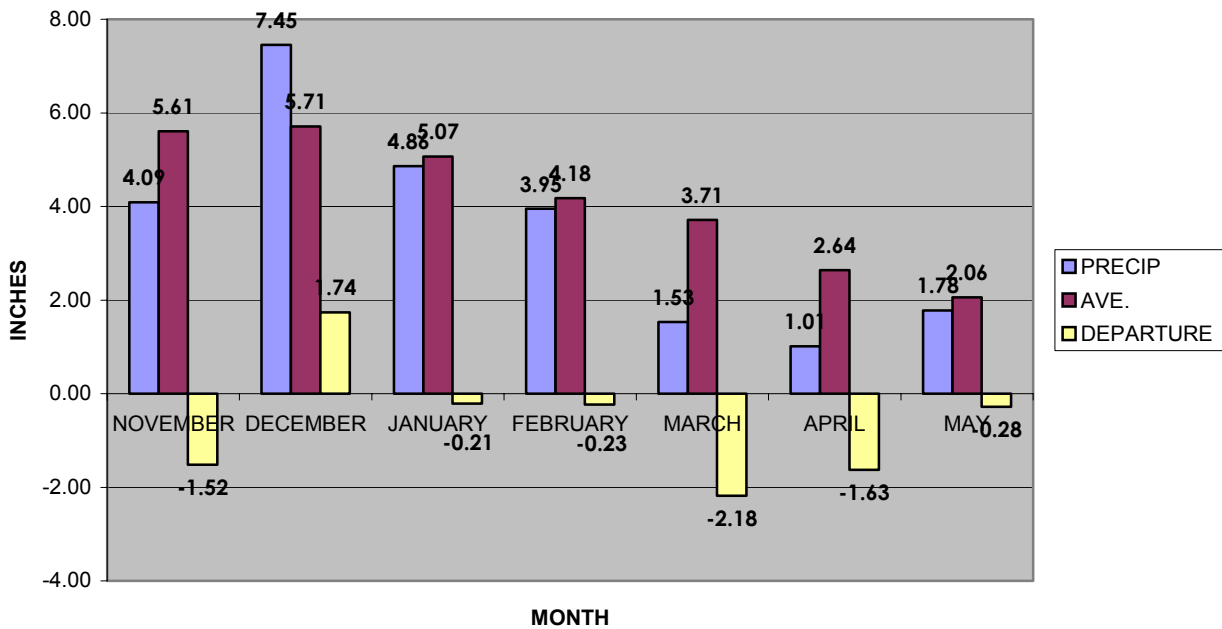


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2003-2004 WET SEASON LAUREL MOUNTAIN

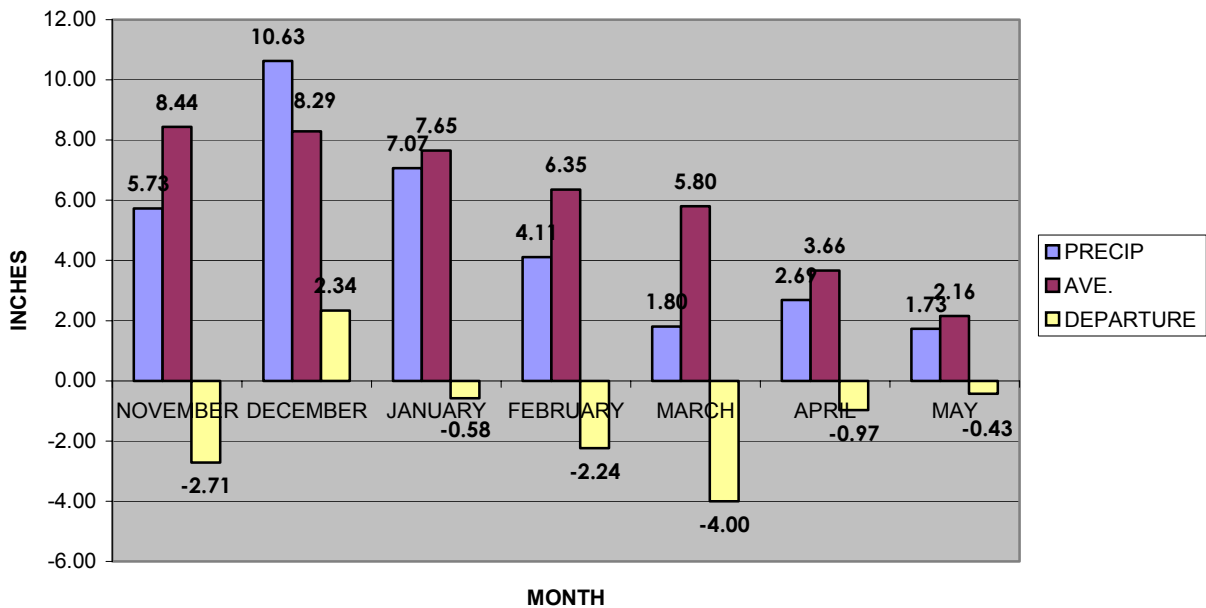


2003-2004 WET SEASON PORTLAND

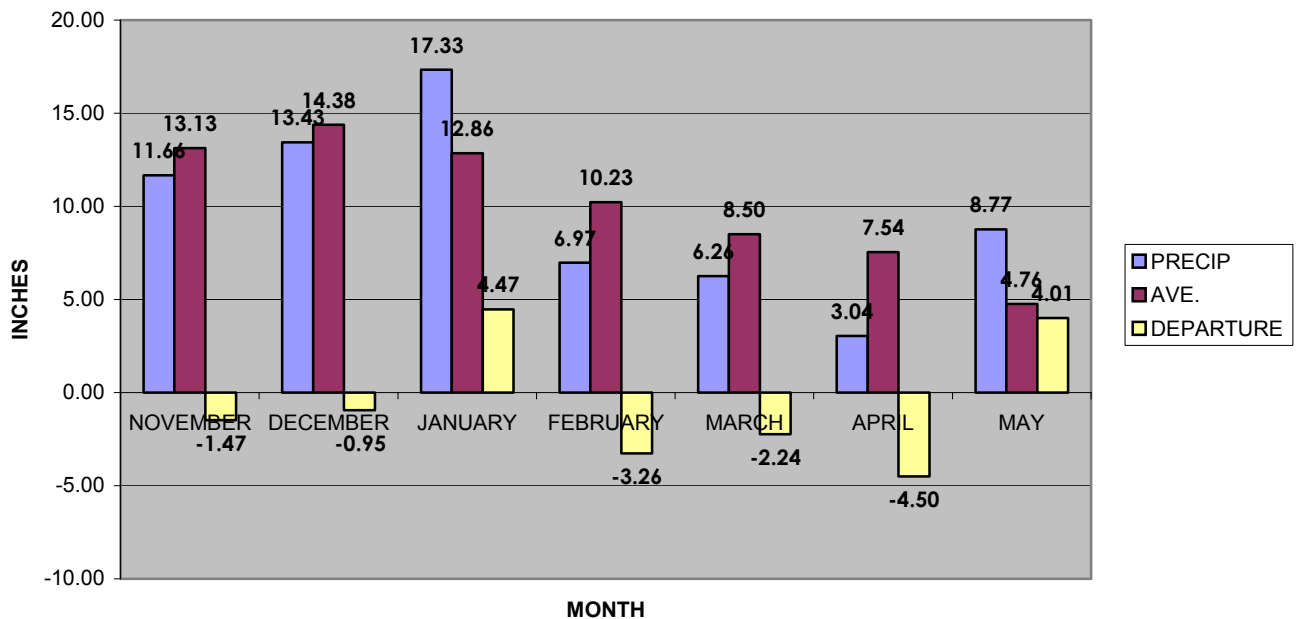


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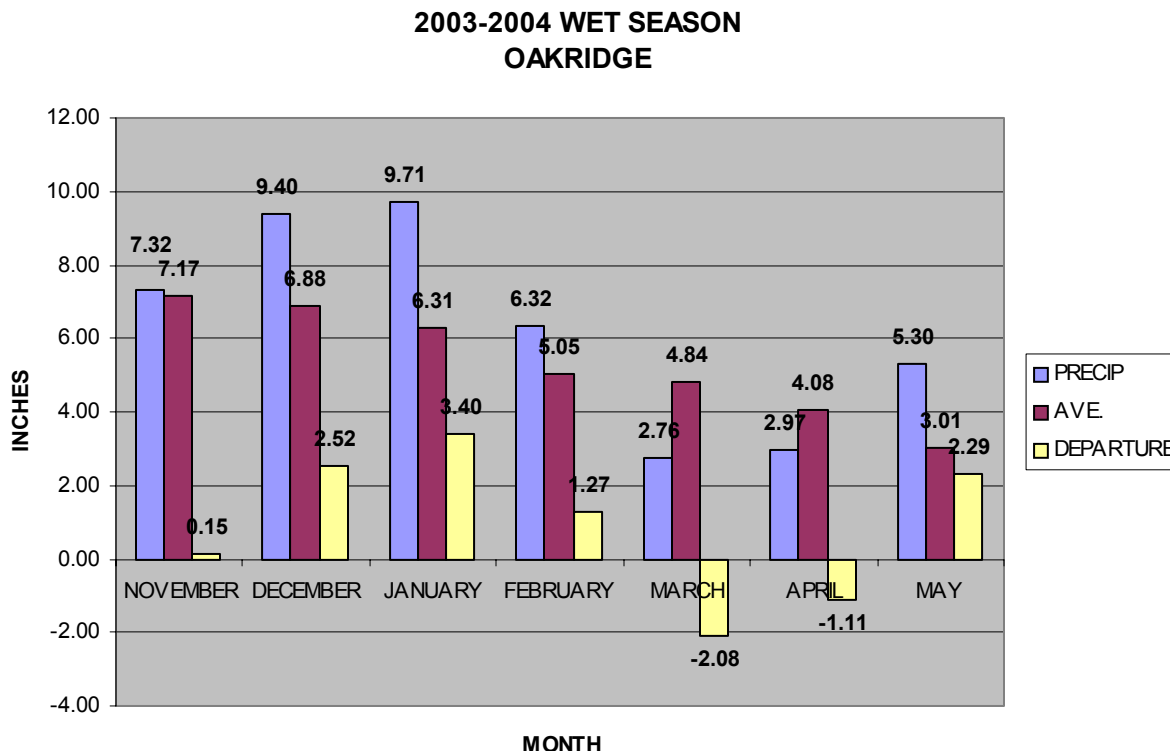
2003-2004 WET SEASON EUGENE



2003-2004 WET SEASON GOVERNMENT CAMP



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FAST FACTS: Zone (604) Willamette Valley had lightning on five consecutive days in early May, and a total of nine days during the entire month of May. Zone 608 recorded lightning on four straight days (June 5th through June 8th).

The highest temperature during the 2004 season for the Coastal Strip zones (601 and 612) was 96 degrees at Cannibal Mountain RAWS (zone 612). This occurred on July 23rd and August 8th. Tillamook RAWS (zone 601) observed 92 degrees on June 17th and July 23rd.

Boulder Creek RAWS (zone 608) is in a sheltered, elevated valley. This location can be several degrees colder at night compared to its neighbors (Pebble and Fields). The lowest morning temperature during the season at Boulder Creek was 31 degrees, which occurred on several days. The last occurrence was September 21st. Pebble RAWS (zone 608) dropped to 32 degrees on the same morning.

The Coast Range (zone 602 and 603) recorded the least number of days (16) when the median precipitation was 0.25 inches or greater. The Central Cascades and foothills (zones 606 and 608) had 20 such days. Five of the 20 days occurred in mid-September. In fact, during the period September 11-20, zones 606 and 608 recorded a median precipitation value of .01 or greater every day. There were six days when the median was .10 to .24 inches.

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2003-2004 SNOWPACK DATA (FOR GOVERNMENT CAMP)

The 2003-2004 Government Camp snow-depth data (Figure 3) is shown on page 11. The chart also includes data from 2002-2003 and the normal snow depth. Snow began to accumulate in the middle and latter portions of November 2003, and then continued a slow climb during December and January. A series of cold and wet storms affected Northwest Oregon and Southwest Washington after Christmas through the first week of January. Snow depth increased from 29 inches on December 25 to 77 inches on January 7. The 77-inch snow depth in early January was about 200% of normal. The 2002-2003 snow depth for the same time period showed a similar trend, but peaked a little earlier (end of December). The snow depth started to diminish in early January 2003.

Conditions fell to “normal” by late January 2004, and then remained fairly constant through February. There was a secondary peak in the first week of March (54 inches on the 6th). However, snow depth rapidly diminished thereafter. Typically, the snow depth reaches a seasonal maximum around mid-March, then slowly decreases. The past two seasons have been quite different. The 2002-2003 season showed the seasonal maximum around March 10, which corresponds to the normal maximum. The season showed another maxima in early April.

Snow cover vanishes, on average, on June 10th. The past two years have been unusual. The snow cover disappeared in early May, about a month earlier than normal. In fact, on April 1 the snow depth was a mere seven inches (average is 40 inches), and then went to zero on the 10th. A few inches accumulated in mid to late April, but disappeared for good on the 26th.



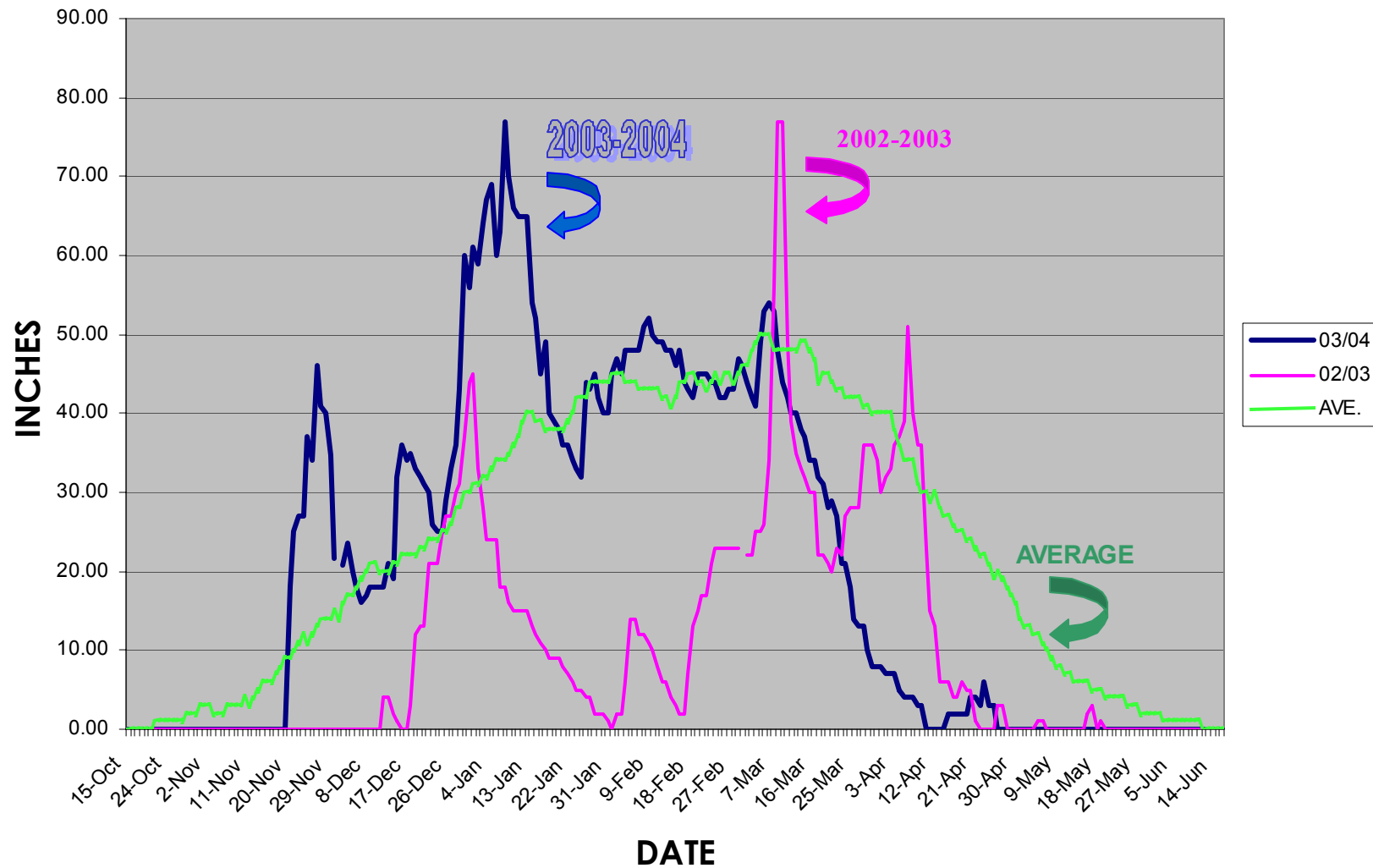
INTERESTING TIDBITS: The first large fires (as reported to the Northwest Coordination Center via ICS-209) occurred on April 27th. One of the fires, Sidwalter, took place on the Warm Springs Reservation. The human-caused fire was 188 acres and was contained the next day.

Region Six was in Preparedness Level 4 for seven days, August 15th through the 21st.

On June 16th and 17th, daytime humidity in the Central Cascades was around 10%. Yellowstone RAWS (zone 606) recorded 9% at 1400 PDT on the 16th. Emigrant and Fields RAWS measured 12%. Emigrant dipped to 9% at 1600 PDT on the 17th. The lowest humidity observed at a Coast Range RAWS was 12%. This occurred at Village Creek (zone 603) at 1500 PDT.

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FIGURE 3 - GOVERNMENT CAMP SNOWDEPTH



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2004 FIRE SEASON LIGHTNING DATA

Table Two shows the aerial lightning frequency for the 2004 season.

TABLE TWO
2004 LIGHTNING DATA (MAY THROUGH OCTOBER)

AREA	# LIGHTNING DAYS 2004	AVE. # DAYS (LAST 11 YEARS)	PERCENT AVE.
ZONES 601/612	13	6.4	204.4%
ZONES 602/603	20	6.1	328.4%
ZONE 604	25	7.7	323.4%
ZONES 605/607/660	28	12.0	233.3%
ZONES 606/608	24	18.5	129.4%

TABLE TWO: 2004 LIGHTNING FREQUENCY. DATA OBTAINED FROM BLM LIGHTNING DETECTION AND NORTHWEST COORDINATION CENTER

A cursory look at the above lightning data would seem to suggest 2004 was an active thunderstorm season. All areas showed well above-normal lightning frequency, generally two to three times the seasonal average. The monthly distribution (not shown) helps to explain the lightning abundance. Cold upper level troughs characterized May and June, a pattern conducive to lightning, especially over the Coast Range and inland valleys. The Coast Range zones (602 and 603) had seven days of lightning in May, the Willamette Valley (zone 604) recorded nine days, and the North Cascades and Foothill zones (605, 607, and 660) had seven days. Generally, about one-half of all lightning days occurred from May through early June, when fuel conditions were “green” (very low risk of large fire development). Another peak lightning period took place in late August. This was another period of wet, closed upper low-pressure systems. One could argue that the 2004 fire season ended in late August. Figure 4 (next page) shows the total rainfall from August 21 through August 23. Notice that the South Washington Cascades, North Oregon Cascades, Coast Range, and even some valleys in Southwest Washington and Northwest Oregon received rainfall in excess of two inches. There were some locations in the Cascades that picked up five or more inches of rain during the period August 21 through August 25.

On August 22nd, seven RAWS sites recorded 2.00 or more inches of rainfall. The most, 2.66 inches, was at Wanderer’s Peak (zone 607). Horse Creek (zone 605) and Log Creek (zone 607) had 2.46 inches.

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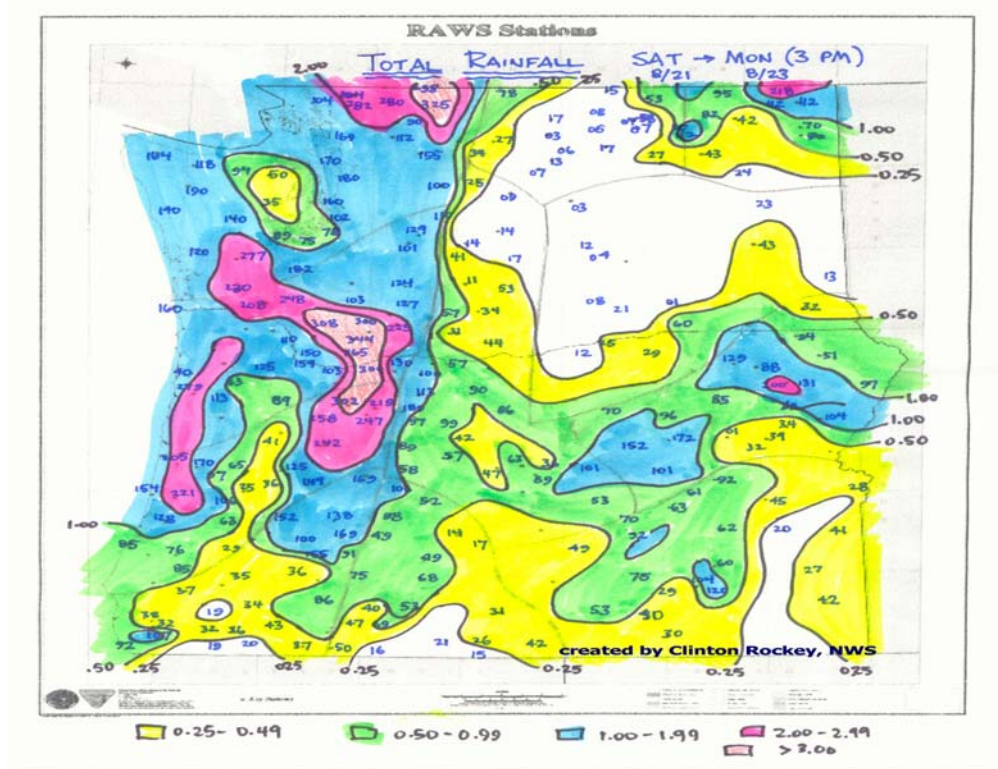


FIGURE 4 – PRECIPITATION ANALYSIS AUGUST 21, 2004 THROUGH AUGUST 23, 2004

“Problem lightning” (defined as lightning occurring in critical fire weather patterns when fuels are moderate to extreme) was not a major factor in 2004. Normally, there are at least one or two critical fire weather patterns (breakdown of an upper ridge, Haines 6 conditions, or lightning after an extended dry period) during the fire season that result in “problem lightning”. These isolated events result in the majority of large fires. There were a couple of “upper ridge breakdowns” in 2004, but these were not “classic” cases. One event took place July 12-13, and another happened August 12-14. The Portland Forecast Office issued Red Flag Warnings for three events during the 2004 season. All three events were for “problem lightning”. It is unusual to endure an entire season without an east-wind event.

The lightning criteria for the Portland forecast area have been modified in an attempt to better represent the true problem patterns. “Dry” lightning is hard to forecast and harder still to verify. The Northwest Coordination Center has developed a more objective analysis for “problem lightning”. The general premise is to combine lightning potential with observed and forecast fuel conditions. A Red Flag Warning is warranted when lightning is expected **AND** fuel conditions are forecast to remain “moderate” or “critical” during and after the weather event. Also, lightning activity must be LAL 3 or greater.